Upslope Sediment Reduction & Road Stabilization in the McGarvey Creek Watershed

Final Report

Cooperator: Yurok Tribe
Cooperative Agreement: 14-48-11333-99-J108
Project Numbers: 99-319(h)-VI-08
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Abstract:

The "Upslope Sediment Reduction & Road Stabilization in the McGarvey Creek Watershed" involves the hydrologic decommissioning of a portion of the M-10 Road in McGarvey Creek. Heavy equipment was used to decommission 900 feet of road and roughly 6,503 yd^3 on the main M-10 road network. This was done to remove a fish barrier and to prevent sediment from entering a class 1 fish-bearing stream.

Introduction:

The goal of this project is to remove fish barriers, and to reduce future erosion within the McGarvey Creek Watershed. The area that was prioritized as an immediate candidate for work was a culverted crossing on the main stem MaGarvey Creek, a small section of Road Reach and a perched landing. The stream crossing was a fish barrier, with a shot-gunning culvert (four to six feet jump distance). The road reach and landing had a high erosion potential. There were visible signs of cracks and scarping on the road surface and in some places had up to 5' of vertical displacement. A landing of similar character directly across the canyon failed in 1994 causing a debris torrent, which blocked McGarvey Creek temporarily and left a 300' logjam that was not passable to fish. In 1998 we modified the logjam to make it fish friendly as part of another rehab project. If the landing that was pulled had failed, there would have been similar catastrophic affects.

Description of Study Area:

McGarvey Creek is an anadromous fish-bearing stream, and a tributary of the Lower Klamath River. It is located at river mile 6.5, and has a drainage area of 8.85 sq miles. It is located in T.12N, R.1E, sections: 1,2,3,4, 10, 11, 12. T.13N, R.1E, sections: 23, 24, 25, 26, 27, 34, 35, 36. McGarvey Creek is in both Humboldt and Del Norte Counties. Vegetation is comprised of mostly alders, with some conifers. The primary land use is timber harvest, with approximately 10% of the watershed being used for conservation (Redwood National Parks). The scope of work covered by this project was done in T.12N, R.1E, section 2 (Humboldt County), along a portion of the M-10 road, owned by Simpson Timber Company.

Methods and Materials:

Surveying: The entire watershed was surveyed using Pacific Watershed Associates (PWA) methods. Roads were prioritized by erosion potential, total volume, cost effectiveness, and location with in the watershed. The M-10 was designated as a

high priority road, and sites 56 (mass movement) & 57 (fluvial erosion) were ranked as having a high erosion potential with direct delivery to the main stem of McGarvey Creek.

Implementation: The sites designated for decommissioning were treated in the summer of 1999. A John Deere 850C Bulldozer and John Deere 230LC Excavator were used for the job. Two tribal member operators were hired to run the machinery, and a tribal member site supervisor oversaw the operations. Both sites were hydro logically decommissioned per Yurok Tribal standards.

- Sediment: Work was started on a large landing, the edges of which were slumping down, ready to fail. Some fill material had already failed in the past, in the form of a debris torrent that made it to McGarvey Creek. We pulled the fill back from the edge of the landing and stockpiled it against the high cutbank on site. Roughly, 3,250 yd^3 of fill material was removed from the edge of the landing thus removing the erosion potential. The 600' stretch of road between this site and the stream crossing was completely out-sloped, with the sediment being stockpiled against the cutbank. There was one cross road drain installed at the location of a spring along this stretch of road. This section of road was located with-in the inner gorge (Riparian Area) of McGarvey creek. Conifers were planted to aid in a fast recovery and to help provide future riparian cover to McGarvey Creek.

- Fish Barrier: The former stream crossing acted as a fish barrier thus isolating several miles of viable habitat upstream. The crossing was fully excavated back to natural slopes. The majority of the fill material was stockpiled on the road bench to the right (looking downstream), and was used to bring the slopes back to a more natural slope. Some fill material was also stockpiled to the left, again bringing the slopes back to natural. The site was left with a twenty-foot wide channel, which matched the natural channel. There was a lack of natural organics on site so straw was used in areas of bare soil to provide ground cover and reduce short-term surface erosion.

Results and Discussion of Accomplishments during the Project:

Our goal was to remove a fish barrier, and to reduce the amount future erosion into the McGarvey Creek. There were 2,134 yd^3 of fill removed from the stream crossing, 3,250 yd^3 from the landing, and 1,119 yd^3 from the stretch of road between the two sites. In total, there were 6,503 yd^3 of unstable fill material removed.

This agreement has also allowed the Yurok Tribe to maintain the KRIS work station. Information on KRIS includes photographs of erosion control projects, equipment operators and training, and of refugial areas in the Lower Klamath Basin. Temperature data for 1999 has also been included in KRIS as well as photos of the data collection sites. KRIS has been utilized mainly as a reference tool, but will increasingly be used to perform analysis on basin-wide data. Examples of photos included in KRIS are attached to this Final Report.

Summary and Conclusions:

In Conclusion, the project was a great success. The Tribal Restoration Department (and aid from Simpson Timber Co.) accomplished what they set out to do and will be monitoring fish movement above the removed barrier in years to come.

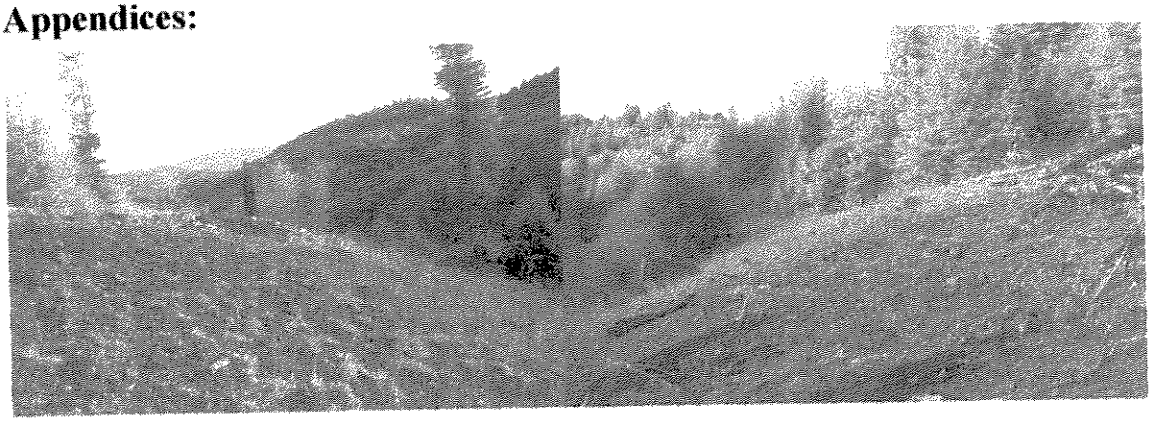
Summary of Expenditures:

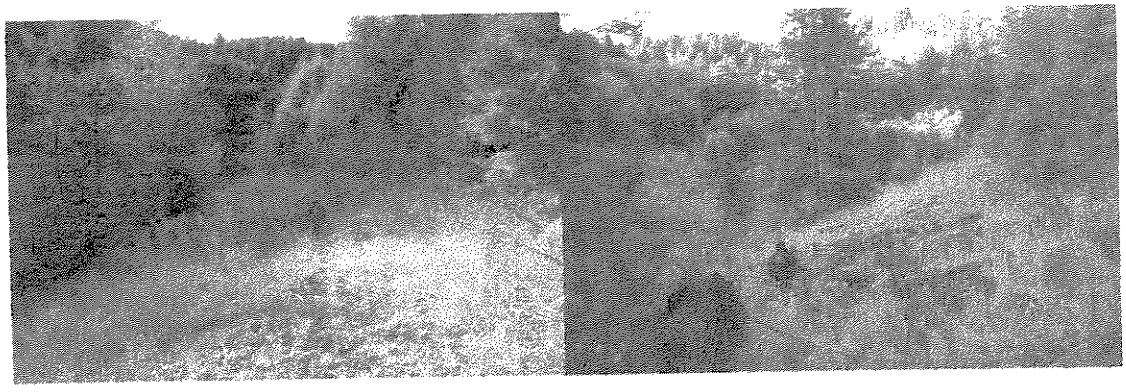
Table 1.

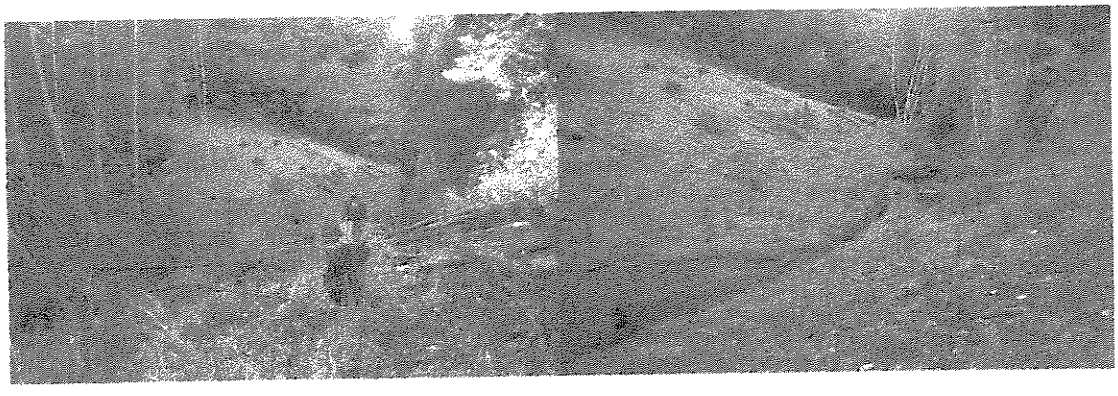
McGarvey Creek Watershed Restoration Implementation Project FY1999 Budget								
						Other Funds		
Category				Requested Funds	Federal Funds	Cash	In-Kind Simpson Timber	
1 Personnel	#Hours		Hour Rate					
a) Wages								
Restoration Techs/Trainees (1)	80	$	14.00	$ 526			$	594
Heavy Equipment Operators (2)	80	$	20.00	$ 650			$	950
				$ 1,176			$	1,544
b) Fringe				$ 376			$	494
subtotal				**$ 1,552**			**$**	**2,038**
3. Operating Expenses	Months		$/month					
Dozer JD 850C	0.5	$	9,500	$ 4,750				
Excavator JD 230LC	0.5	$	8,500	$ 4,250				
	$/gal		gal					
Fuel	1.5		3,200	1,005			$	3,795
subtotal				**$ 10,005**			**$**	**3,795**
Totals				**$ 11,557**			**$**	**5,833**
Total project cost		**$**	**17,390**					
Total Requested		**$**	**11,558**					

The cost effectiveness of this project was $\$2.67/yd^3$, which is very low. The only way we were able to accomplish this was we had another larger project close by so overhead costs and transportation were absorbed by the other project. Normally the average cost of moving dirt is \$6 to \$9 a yd^3.

Appendices:







This photo shows an adult chinook salmon as well as juvenile chinook salmon and steelhead holding in the cold water plume of Pecwan Creek, near Weitchpec, CA. Photo courtesy of the Yurok Tribe
(August 3, 2000).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